

SELECTIVE NITRIDATION OF GATE OXIDES

Abstract

A semiconductor structure includes thin gate dielectrics that have been selectively nitrogen enriched. The amount of nitrogen introduced is sufficient to reduce or prevent gate leakage and dopant penetration, without appreciably degrading device performance. A lower concentration of nitrogen is introduced into pFET gate dielectrics than into nFET gate dielectrics. Nitridation may be accomplished selectively by various techniques, including rapid thermal nitridation (RTN), furnace nitridation, remote plasma nitridation (RPN), decoupled plasma nitridation (DPN), well implantation and/or polysilicon implantation.